



DESCRIPTIVE NOTES

In this publication, groundwater availability on a regional scale is indicated in terms of probable quantities of water available, depths at which water is commonly found, and water quality at sampled locations. Because of the complexity of groundwater occurrence, the foregoing information is presented on four map sheets.

Sheet 1: Supplies in Shallow Overburden
Sheet 2: Supplies in Deep Overburden
Sheet 3: Supplies in Bedrock
Sheet 4: Water Quality
Hydrogeologic interpretations are based on data obtained from approximately 8,000 water-well records on file with the Ontario Ministry of the Environment and from past documented studies of groundwater availability. The appropriate references are listed on each map sheet. Reliability of the interpretations varies throughout the region and a periodic updating or revision of the present interpretation may be necessary as new hydrogeologic information becomes available.
It is important to note that the interpreted probable well yields may not everywhere represent yields available to all wells because of variations in local hydrogeology, type of well construction, and in the reliability of available data. Therefore, yields are thought to be good approximations in most areas. In cases where reliable, long-term yields are sought, it is necessary to undertake detailed hydrogeologic investigations and pumping tests.

ASSESSING WATER REQUIREMENTS

In order to evaluate well yields, the amount of water required from a prospective well should first be estimated. To estimate the approximate domestic and livestock daily water requirements, multiply the number of users/people and animals by the appropriate figure in the table below. If desired, an additional 20 to 30% can be added to the total to account for increased demand in the future. While individual residential needs are difficult to estimate, most homes with water-consuming items such as washing machines will average about 100 gallons per day per person.

It is important to take into account the water demand during peak periods of usage in order that the well does not run dry temporarily. This demand can be estimated by counting the number of fixtures and water outlets in the house which will be used at one time, and multiplying by the flow rate for each. Table showing the flow rate per fixture can be obtained from water-supply equipment dealers.

Approximate Daily Water Requirements	
each member of the family (kitchen, laundry, bath)	50-150 gallons per day
for each milking cow (incl. washing)	35 gallons per day
for each dry cow	15 gallons per day
for each steer, horse	12 gallons per day
for each hog	4 gallons per day
for each sheep	2 gallons per day
for each 100 chickens	6 gallons per day
for each 100 turkeys	12 gallons per day

Note: - table modified from F. R. Horn, Farm Water Supply, Ontario Department of Agriculture and Food, Publication 476

For information on irrigation requirements, contact your Regional Office of the Ontario Ministry of Agriculture and Food.

A COMPARISON OF DIFFERENT WELL TYPES AND THEIR APPLICATIONS

EVALUATION OF PROSPECTIVE WELL SITES

By using the maps in this publication along with the following step-by-step procedure, prospective well sites can be evaluated in terms of probable yields, likely depths to water-bearing zones, and likely quality of water at each site. Subsequently, this information can be used in other considerations such as possible water treatment, pump type and size, well cost, and type of well construction (a table illustrating the different types of well construction and their uses is included in the appendix).

The maps should be used in the suggested sequence in order to obtain the most economic wells. Map 3135-1 indicates yields from the shallowest formations and should be consulted first. Progressively deeper and more costly wells will have to be constructed as water is sought from deeper formations in order to obtain the yields indicated on maps 3135-3 and 3135-5.

Evaluation Procedure

1. locate the well site on Map 3135-1 of Sheet 1 (Yields from Shallow Overburden);
 2. note the colour of the map at the well site;
 3. refer to the legend and relate the colour to the appropriate probable yield;
 4. if the probable yield does not meet your water requirements, repeat steps one through three using Map 3135-2 on Sheet 2 (Yields from Deep Overburden). Similarly, if probable yields determined from Map 3135-3 are insufficient, repeat the same steps using Map 3135-4 on Sheet 3.
- To evaluate the depths to water-bearing zones:
5. if Map 3135-1 was selected in the above steps, water-bearing zones occur at depths easily reached by shallow dug and bored wells and sand points;
 6. if Map 3135-2 was selected, locate the well site on Map 3135-4 and note the depth to the water-bearing zones by using the legend; if Map 3135-3 was selected, locate the well site on Map 3135-5 and note the depth to the water-bearing zones by using the legend;
 6. exact depths to water-bearing zones for individual wells are shown on maps 3135-1, 3135-3 and 3135-5.

To evaluate water quality:

7. to evaluate the likely groundwater quality at a potential well site, locate the well on the selected yield map and note the nearby groundwater sampling points. Chemical analyses of these samples are found in the Inorganic Chemical Analyses tables 1, 2, and 3 on Sheet 4. To interpret the significance of the analyses, refer to Table 4 on Sheet 4.

YIELDS FROM BEDROCK - SUMMARY

Yields of over 50 gallons per minute to wells in bedrock occur in a few isolated wells penetrating fractured limestone or dolomite at Alliston, east of Bradford and south of Bradford in the southern part of the map area and north of Simcoe in the northwestern part of the map area. Less fractured limestone and dolomite yield between 10 and 50 gallons per minute at Stayner and Simcoe in the north, as do some highly fractured shales near Tottenham in the southern part of the map area. Yields between 2 and 10 gallons per minute are found in areas of limestone, dolomite and sandstone of the Simcoe Group and the Anabel, Fossil Hill, Manitoulin and Whirlpool formations. Yields of less than 2 gallons per minute are found in most areas underlain by shales of the Cabot Head, Queenston, Georgian Bay and Whitby formations except in the northwestern part of the map area where some of these formations will yield between 2 and 10 gallons per minute.

SOURCES OF INFORMATION

- Bond, J. J., and Telford, R. G. 1975. Bedrock geology of the Bolton area, southern Ontario. Ontario Division of Mines, Map 2338.
- Gwynn, O. H. J., and Fraser, J. Z. 1975. Bedrock geology of the Orangeville area, southern Ontario. Ontario Division of Mines, Map 2339.
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- Burrows, G. J., and Ford, M. J. 1974. Bedrock topography of the Chr. Lake area, southern Ontario. Ontario Division of Mines, Preliminary Map P878. Bedrock Topography Series.
- Kearney, P. F. 1964. Bedrock topography of the Barrie area, southern Ontario. Ontario Division of Mines, Preliminary Map P879. Bedrock Topography Series.
- Dane, R. E. 1962. Pleistocene geology of the Lake Simcoe district. Ontario Geological Survey of Canada, Memoir 256.
- Gwynn, O. H. J., and Fraser, J. Z. 1975. Bedrock topography of the Dundalk area, southern Ontario. Ontario Division of Mines, Preliminary Map P308 (revised). Bedrock Topography Series.
- Kearney, P. F. 1964. Bedrock topography of the Orangeville area, southern Ontario. Ontario Department of Mines, Preliminary Map P266. Bedrock Topography Series.
- Libby, B. A. 1969. Paleogeology of the Lake Simcoe area. Ontario Geological Survey of Canada, Memoir 355.
- Sibul, U., and Cho-Ying, A. V. 1971. Water resources of the Upper Nottawasaga River drainage basin. Ontario Water Resources Commission, Division of Water Resources, Water Resources Report 3.
- Sibul, U., and Wang, K. T., Valley, D. J., and Chin, V. I. (in press). Ground-water resources of the Holland-Black river drainage basin. Ontario Ministry of the Environment, Water Resources Branch, Water Resources Report 14.
- Telford, P. G. 1975. Bedrock geology of the Collingwood-Nottawasaga area, southern Ontario. Ontario Division of Mines, Preliminary Map P470. Bedrock Topography Series.

Bedrock-surface elevation derived from water-well records on file with the Ontario Ministry of the Environment up to the end of 1976.

Bedrock topography interpretation by D. Walmsley and M. E. Turner.

Cartography by H. De Souza.

Base maps derived from 1:50 000 map sheets of the National Topographic series.



MINISTRY OF THE ENVIRONMENT
Water Resources Branch

COUNTY OF SIMCOE (Southern Portion)

Map 3135

GROUND-WATER PROBABILITY

SHEET 3

WATER SUPPLIES IN BEDROCK